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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

KANG, DONGHEE

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 06/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/039,215

Applicant(s)

BASCERI ET AL.

Examiner

Donghee Kang

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on January 3, 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

1. This application appears to be a division of Application No. 09/652,863, filed August 31, 2000. A later application for a distinct or independent invention, carved out of a pending application and disclosing and claiming only subject matter disclosed in an earlier or parent application is known as a divisional application or "division." The divisional application should set forth only that portion of the earlier disclosure which is germane to the invention as claimed in the divisional application.

### ***Information Disclosure Statement***

2. Acknowledgment is made of receipt of applicant's Information Disclosure Statement (PTO-1449) filed January 31, 2002.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase "the conducting layer" is unclear because it means the first conducting layer or second conducting layer. Examiner considers the conducting layer as the second conducting layer.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims **1-3, 5-6 & 8-9** are rejected under 35 U.S.C. 102(e) as being anticipated by Miki et al. (US 6,309,894).

Re claim **1**, Miki et al. teach an integrated circuit comprising an improved conductor-insulator-conductor (CIC) sandwich, wherein the CIC sandwich comprises (Fig.1):

a first conducting layer (102); a first insulating layer (103) deposited over the first conducting layer, wherein the first insulating layer comprises a structure having a plurality of oxygen sites partially filled by a plurality of oxygen atoms, wherein the unfilled oxygen sites define a concentration of oxygen vacancies; a second conducting layer (105) deposited over the first insulating layer; and an oxygen-rich interface layer (104) interposed between the first insulating layer and the second conducting layer, wherein the oxygen-rich interface layer acts as a sink for absorbing oxygen vacancies that migrate from the first insulating layer so as to reduce the buildup of oxygen

vacancies at the interface layer and so as to reduce the concentration of oxygen vacancies of the first insulating layer (Col.4, line 11-Col.6, line 34).

Re claim 2, Miki et al. teach the second conducting layer comprising a plurality of oxygen-rich regions that are distributed throughout the second conducting layer, said regions absorbing oxygen vacancies that migrate through the second conducting layer (Col.4, lines 28-33).

Re claim 3, Miki et al. teach the second conducting layer comprising platinum (Pt).

Re claim 5, Miki et al. teach the conducting layer is highly oxidized.

Re claim 6, Miki et al. teach the second conducting layer having a quantity of oxygen greater than that which is required for stoichiometric stability.

Re claim 8, Miki et al. teach the first conducting layer comprising platinum (Pt).

Re claim 9, Miki et al. teach the structure of the first insulating layer is a crystalline structure (Col.4, lines 40-54).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miki et al. in view of Moise et al. (US 6,211,035).

Miki et al. teach the substantially the entire claimed structure, as applied to claim 1 explained above, except that the second conducting layer having a thickness between 100 Å and 2000 Å. However, Moise et al. teach the upper electrode having a thickness 60 nm which is in the claimed ranges (Col.9, lines 13-14). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the upper electrode having a thickness between 100 Å and 2000 Å as taught by Moise in Miki's device, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miki et al. in view of Aoki et al. (US 6,297,085).

Miki et al. teach metal oxide can be used as an upper electrode but do not expressly teach IrO<sub>2</sub>. However, Aoki et al. teach iridium oxide (IrO<sub>2</sub>) can be used to improve the polarization fatigue characteristics property of the capacitor (Col.1, lines 58-61). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute platinum (Pt) of Miki with iridium oxide as taught by Aoki since iridium oxide (IrO<sub>2</sub>) can be used to improve the polarization fatigue characteristics property of the capacitor.

### ***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donghee Kang whose telephone number is 703-305-9147. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 703-308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

*Donghee Kang*  
Donghee Kang  
Examiner  
Art Unit 2811

dhk  
June 23, 2003